

CLAIMS

We claim:

5 1. A device for treating ischemic tissue comprising
 an elongate shaft having proximal and distal ends, a lumen extending
 therebetween;
 a control structure operably connected to the shaft for actuation of the device by
 user activation;
10 at least one injury effector adjacent the elongate shaft's distal end, and
 capable of inducing a mechanical or energy injury produced at a tissue site in
 response to actuation by the control structure; when the shaft's distal end is
 placed against a tissue surface;
 at least one therapeutic-substance delivery effector carried on the
15 elongate shaft at the distal end thereof, said therapeutic-substance delivery
 effector having at least one therapeutic-substance delivery port through which
 therapeutic-substance can be delivered from the effector into tissue against
 which the effector is placed, each of said one or more injury-treatment effectors
 and said one or more therapeutic-substance delivery ports being spaced from
20 one another at selected positions and adapted to be placed simultaneously
 against such tissues; and
 at least one therapeutic-substance source having a reservoir for storing a
 substance and in substance communication with said therapeutic-substance
 delivery ports, and responsive to said control structure to eject therapeutic-
 substance from said reservoir through said one or more ports into such tissue,
25 wherein, said control structure, when activated by a user, operates to
 actuate said injury-treatment effector, and additionally actuates said
 therapeutic-substance source to expel therapeutic-substance through said
 one or more ports to create one or more sites of therapeutic-substance
 infusion in the tissue at defined spaced-apart locations with respect to the
 created one or more sites of injury.

2. The device of claim 1 further comprising a third treatment effector for creating a treatment position marker.
3. The device of claim 2 wherein the third treatment effector is separate from the injury and therapeutic-substance delivery effectors.
4. The device of claim 2 wherein the marking effector is combined with either the injury, or therapeutic-substance delivery, or injury and therapeutic-substance delivery effectors.

10

5. The device of claim 1 wherein the injury and therapeutic-substance delivery effectors actuate simultaneously.
6. The device of claim 1 wherein the injury and therapeutic-substance delivery effectors actuate sequentially.
7. The device of claims 2, 3, or 4 wherein the injury, therapeutic-substance delivery, and position-marking effectors actuate simultaneously.

15

8. The device of claims 2, 3, or 4 wherein the injury, therapeutic-substance delivery, and position-marking effectors actuate sequentially.
9. The device of claims 2, 3, or 4 wherein the position-marking effector actuates independently from the injury effectors or therapeutic-substance delivery effectors.

20

10. The device of claim 1 wherein the therapeutic-substance-source is actuated independent of the actuation of the therapeutic-substance delivery effectors.
- 30 11. The device of claim 1 wherein the therapeutic-substance-source is actuated simultaneous to the actuation of the therapeutic-substance delivery effectors.

12. The device of claim 1 wherein the elongate shaft further comprises a
steerable distal end.

5 13. The device of claim 1 further comprising an optical viewing port located at the
elongate shaft's distal end in optical communication with an imaging device.

14. The device of claim 1 wherein the elongate shaft further comprises a contact
sensor located on the elongate shaft's distal end.

10 15. The device of claim 1 wherein the elongate shaft further comprises a
positioning aid located on the elongate shaft's distal end.

16. The device of claim 1 wherein the elongate shaft is a catheter.

15 17. The device of claim 1 wherein the elongate shaft is an endoscope.

18. The device of claim 1 wherein the elongate shaft is an open surgical hand
held device.

20 19. A method of treating ischemic tissue comprising the steps of,
• identifying target tissue regions of ischemic tissue,
• providing a device that can upon activation and by a single placement of
the device, cause an injury to at least one site of target tissue different
than at least one site of target tissue where a therapeutic-substance is
25 delivered,
• placing the device against the identified target tissue, and,
• activating the device to cause injury to selected sites within the target
tissue, and to cause therapeutic-substance to be delivered to regions in
the target tissue at preselected sites away from the sites of injury.

30 20. A method for treating a target tissue comprising the steps of
• identifying the target tissue

- producing one or more sites of injury within said region, where multiple sites of injury, if produced, are at known relative positions with respect to one another, and
- infusing therapeutic-substance into on or more sites different than the one or more sites of injury.

5

21. A method for treating ischemic tissue comprising the steps of

- identifying a region of ischemic tissue within a patient's body
- producing one or more sites of injury within such region, where multiple sites, if produced, are at known relative positions with respect to one another,
- infusing therapeutic-substance into one or more sites different from such injury sites and at known positions away from such injury sites.

10